

REMARKS/ARGUMENTS

Reconsideration of this application is requested. Claims 10, 11 and 19-28 will be active in the application subsequent to entry of this Amendment.

In preparing this response applicants noted that the expression "an oxidizing gas", specified in original claim 1, became changed to "an oxygen gas" in the current version of claim 10, perhaps due to a transcription error. In any event, claim 10 is amended to refer to "an oxidizing gas" to revert to the wording of this passage of claim 1 as originally filed.

In addition, in order to better define the present invention, claim 10 has also been amended to refer to "free phosphorus generated by the decomposition of the glass raw material is oxidized with bubbles of the oxidizing gas" based upon paragraphs [0018-0020] of the text of the description of the invention. Claims 11 and 19 remain in the application and both depend from claim 10 as above amended.

In the present specification, claim 12, specifying a fluorophosphate glass, is dependent upon claim 10 specifying a phosphate glass, applicants considering that the fluorophosphate glass is a subset of and included in the phosphate glass. However, some skilled in this art may take the position that phosphate glasses and fluorophosphate glasses are different in kind. In order to avoid any potential confusion, claim 12 has been withdrawn and rewritten as two new independent claims, claim 23 corresponding to claim 10 as amended and new claim 26 corresponding to the revised version of claim 13, now new claim 20. Each of these two new independent claims are paired with equivalents to claims 11 and 19 as dependent claims.

The examiner has indicated that claim 13 is allowable, so with this in mind claim 13 has been rewritten and revised to include the features of claim 10 and, for convenience, is presented as new claim 20 also with a pair of dependent claims corresponding to current claims 11 and 19.

The Official Action contains three art-based rejections, one directed to claim 10 as allegedly being anticipated, a second to claims 10 and 19 on the basis of "obviousness", and a third directed to claims 11 and 12 also on the basis of alleged "obviousness". All three rejections are traversed having regard to the new and amended claims presented above as well as the remarks and comments that follow.

The references applied in the Official Action may be summarized as follows:

The Rapp reference (US 4,076,541) discloses a method of making a phosphate laser glass having Nd_2O_3 as the active lasing species. The Rapp reference in column 2 points out that since residual water in phosphorus-containing glass quenches the fluorescence of the Nd ion, it is necessary to decrease the residual water in the laser glass. Rapp, column 2, line 39, et seq., describes that the atmosphere in contact with the molten glass during at least the final stages of the melting is a dry oxygen-containing gas, such as dry air or oxygen, and that during at least part of the melting the dry gas can be bubbled through the melt to speed the process of drying if desired.

However, the Rapp reference does not disclose or contemplate that a phosphorus-containing glass raw material charged into a melting vessel is oxidized with the bubbling gas or that the corrosion of the melting vessel can be decreased by the oxidation with the bubbling gas.

In Matsukawa et al (US 4,919,699), when a laser glass is melted, an oxidizing gas is bubbled so that platinum inclusions included in a molten glass are removed by ionization. However, the Matsukawa et al reference does not disclose or suggest that a phosphate glass raw material charged into a melting vessel is oxidized with the bubbling gas or that the corrosion of the melting vessel can be decreased by the oxidation with the bubbling gas.

The Broemer et al reference (US 4,857,487) does not disclose any specific melting method.

The differences between applicants' claims and the content of the prior art are substantial. The invention of Rapp seeks to decrease the residual water in a molten glass, while the present invention seeks to decrease the corrosion of a melting vessel.

The invention of Rapp discloses bubbling of an oxidizing gas, but fails to disclose a requirement of the present invention, namely that the oxidizing gas is bubbled in a position where a phosphate glass raw material is charged so that a substance generated by decomposition of the raw material is oxidized.

As explained above, the present invention and the invention of Rapp differ in both object and procedure, the present invention is novel over the disclosure of Rapp. Further, Rapp fails to disclose that a phosphate glass raw material generates free phosphorus when decomposed, that the free phosphorus corrodes the melting vessel to a particularly great extent, that the free phosphorus is readily oxidized by the bubbling of the oxidizing gas to lose its corroding property and that the most advantageous to carry out the bubbling is in a position where the raw material is charged, for readily removing the corroding property of the free phosphorus so that the melting vessel can be protected from corrosion. The present invention provides a further advantage in that decomposition products such as free phosphorus are readily oxidized by the bubbling, melting of the glass is promoted.

Overall, the Rapp reference discloses nothing concerning the function and effects of the present invention, and the present invention is therefore not anticipated by the Rapp reference.

The object of the invention of Matsukawa et al is to remove platinum inclusions caused to be included in a glass by corrosion of a melting vessel, and differs from the object of the present invention that seeks to decrease or prevent the corrosion of a melting vessel. In Matsukawa et al, an oxidizing gas is bubbled for removing the above inclusions by ionization.

Matsukawa et al disclose bubbling of an oxidizing gas, but fails to disclose a requirement of the claims of the present invention, namely that an oxidizing gas is

bubbled in a position where phosphate glass raw material is charged so that substances generated when the raw material is decomposed are oxidized.

Further, Matsukawa et al fails to disclose that a phosphate glass raw material generates free phosphorus when decomposed, that the free phosphorus corrodes the melting vessel to a particularly great extent, that the free phosphorus is readily oxidized by the bubbling of the oxidizing gas to lose its corroding property and that the most advantageous to carry out the bubbling is in a position where the raw material is charged, for readily removing the corroding property of the free phosphorus so that the melting vessel can be protected from the corrosion.

In summary, the Matsukawa et al reference discloses nothing concerning the object, constitution, function and effects of the present invention, and the present invention is therefore not suggested by the Rapp reference.

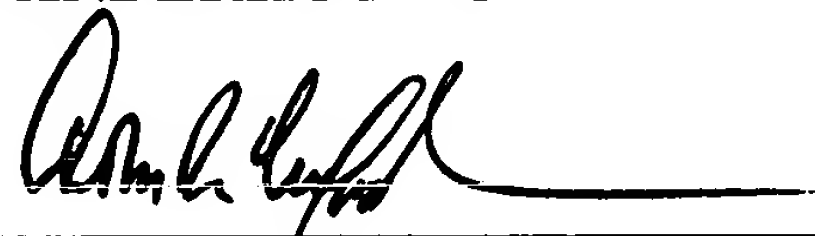
Since the Broemer et al reference does not describe any specific glass melting method, the present invention is not at all inferable to one skilled in the art even if Broemer et al and Matsukawa et al are combined.

For the above reasons it is respectfully submitted that all claims now pending in this application are in condition for allowance. Favorable action is solicited.

Respectfully submitted,

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